Mr. Justice stated to the Society, that the Astronomical Instruments ordered for the High School Observatory, from Münich, had arrived, and invited the members to inspect them. Whereupon, Professor Bache proposed the following resolutions, which were adopted by the Society.

Resolved, That the Committee on Astronomical Observations be requested to examine the instruments recently imported from Münich, for the Observatory of the Central High School, by the Controllers of the Public Schools, and to report in relation to them to the Society.

Resolved, That the same Committee be requested to consider and report to the Society, the best application of the sum of money in the possession of the Society, which was collected for the erection of an Astronomical Observatory.

Mr. Vaughan reported the death of Lucien Bonaparte, Prince of Canino, a member of the Society, aged 66.

A letter was read by Mr. Vaughan from Mr. Charles P. Fox, presenting to the Society, in his own name, and that of his sisters, the collection of the original letters and papers of Benjamin Franklin. (See Proceedings, July 17.)

On motion of Mr. Ord, the Secretary was directed to transmit to Mr. Fox a special vote of thanks for his valuable donation.

Stated Meeting, October 2.

Present, twenty-nine members.

Dr. CHAPMAN, Vice President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Royal Society. Report of the Committee of Physics, including Meteorology, on the objects of Scientific Inquiry in those Sciences. Approved by the President and Council. 8vo. London, 1840.—*From Mr. Petty Vaughan.*

Monument de Yu, ou la plus Ancienne Inscription de la Chine, suivie de trente-deux formes d'Anciens Caractères Chinois, &c. Par Joseph Hager. Fol. Paris, 1802.—*From Mr. Du Ponceau.*

Discours sur les Revolutions de la Surface du Globe, &c. &c. Par M. Le Baron Cuvier, &c. &c. 5ème édit. 8vo. Paris, 1828.—*From the same.*

Des Caractères Physiologiques des Races Humaines considérés dans leurs Rapports avec l'Histoire, &c. &c. Par W. F. Edwards, D.M., &c. &c. 8vo. Paris, 1829.—*From the same.*

The American Almanac and Repository of Useful Knowledge, for the year 1841. 8vo. Boston, 1840.—*From Mr. J. E. Worcester.*

An Examination of Dr. Burnet's Theory of the Earth, with some remarks on Whiston's New Theory of the Earth, &c. &c. By J. Keill, A.M., &c. Second Edition. To the whole is annexed a Dissertation on the different Figures of Cœlestial Bodies, &c. By Mons. De Maupertuis, &c. &c. 8vo. Oxford, 1734.—*From Mr. Vaughan.*

Des Administrations Provinciales, Mémoire présenté au Roi par feu M. Turgot. 8vo. Lausanne, 1788.—*From the same.*

Lettres Amèricaines, dans lesquelles on examine l'Origine, l'État Civil, Politique, &c. &c. des Anciens Habitans de l'Amérique, &c. &c. pour servir de Suite aux Mémoires de D. Ulloa. Par M. le Comte J. R. Carli, &c. &c. 8vo. 2 vols. Boston, 1788.—*From the same.*

Ξενοφωντος Κυρου Παιδεια, βιβλια οκτω. Xenophontis de Cyri Institutione Libri octo, &c. &c. Curâ Thom. Hutchinson, A.M. Edit. 6ta. 8vo. London, 1765.—*From the same.*

Map of the Inland Navigation, Canals and Rail Roads, with the situations of the various Mineral Productions throughout Great Britain, from actual Surveys projected on the Basis of the Trigonometrical Survey made by order of the Honourable the Board of Ordnance, by J. Walker, &c. &c., accompanied by a Book of Reference, compiled by Joseph Priestley, Esq., &c. &c.; in six sheets. London, 1831.—*From the same.*

Lectures on the Theory and Practice of Physic. By William Stokes, M.D., &c. &c. Second American edition, with numerous Notes, and twelve additional Lectures, by John Bell, M.D., &c. &c. 8vo. Philadelphia, 1840.—*From Dr. Bell.*

Treatise on the Physiological and Moral Management of Infancy. By Andrew Combe, M.D., &c. &c., with Notes and a Supplementary Chapter, by John Bell, M.D., &c. &c. 12mo. Philadelphia, 1840.—*From the same.*

Ensaio Corografico sobre a Provincia do Pará, por Antonio Ladislau Monteiro Baena, &c. &c. 8vo. Pará, 1839.—*From the Author.*

FOR THE CABINET.

Sundry Specimens of Minerals, &c. from the southern and western parts of the Union, from Mr. C. G. Forshey, of Louisiana.

1. A coal recently found on the Arkansas river, about 300 miles beyond the capital of the State. The stratum crops out on the bank of the river, between high and low water mark, in a line of hills called "Spadra Bluffs," one of the Ozark range. A shaft has been sunk by John Walker, the discoverer, an enterprising citizen of Natchez, Miss. At the depth of 35 feet, he found the coal 4 to 5 feet thick. The following analysis is from Professor L. D. Gale, of Jefferson College, Mississippi.

"*Extracts from the Journal of the Laboratory.*

"Specimen of coal furnished by Prof. Forshey, of Natchez, February, 1840. 100 grs. of the coal, (Specific gravity = 1.336, and of jet black,) were put into a close vessel and heated to redness for two hours, and weighed while warm. Amount lost = 9.75 grs. The residuum, consisting of coal and earthy matters, was again heated, but in an open platinum crucible, until all the carbon was burned away. Loss by the combustion = 80.81 grs. The earthy matters left, removed from the crucible, weighed 9.44 grs. The specimen, then, is composed of volatile matter per cent. - - - - - - 9.75

Carbon, per cent. - - - - 80.81

Earthy matters, - - - - 9.44

"The volatile matters were found to be composed chiefly of water and carburetted hydrogen, with a mere trace of sulphur.

"The coal belongs to the class called Bituminous Coal, but has not enough to admit of coking by heat. * * * * * It is richer in carbon than any of the four varieties of English Bituminous Coal."

It ignites easily without the aid of charcoal, and burns with a clear white blaze, without smoke, leaving a very small quantity of white ashes and earthy matter.

2. A Shell, Unio Asperrimus, Lake Concordia, La. 3. Two Shells, Unio Trapezoides, Lake St. Joseph, La. 4. One Shell, Unio Pustulatus, Lake Bruin, La. 5. Single valves of two Shells, U. Subrotundus, Lake St. Joseph. 6. Two Shells, Unio Parvus, Lake Concordia, La. 7. Five species of fossil Coralloides, from Jackson County, Iowa Territory, 1838. 8. Two Cyathphylla and an Orthocera, from the Chert, above the mountain limestone of Copper creek, Iowa, 1838. 9. Specimen of Alabaster, laminated sulphate of lime, from a cavern near Charleston, Iowa, 1838. 10. A cast, in Chalcedonic Quartz, of a Pentamiris, from the Chert of Iowa, 1838. 11. Three Iron Ores, Hematite, Crystallized Nodular Oxide, and Pipe Ore, Jackson County, Iowa, 1838. 12. A Cyathphyllum, and a Coralloides, from Calloway County, Missouri, 1839. 13. A specimen of Lignite, and the laminated Gypsum which enveloped it, in the form of a concretion. From the base of the Natchez

Bluff, 170 feet below the surface. When obtained, the specimen was rotten wood, so decayed as to be easily crushed between the fingers. The ligneous fibre was very palpable, and showed it to be *oak*. After twenty days exposure, it was covered with a fine frost of Copperas, (Sulph. Iron,) and was transformed into beautiful lignite. 14. A piece of Brick, from the Mounds on Lake St. Joseph, Louisiana. Its porousness, Mr. F. found from some specimens imperfectly burnt, arises from the entire combustion of the moss used to give the mortar consistency. 15. An Iron Ore, from the pudding stone forming at the base of the Natchez Bluffs. When first broken the cavity was filled with white potter's clay, coated with brown ochre at the surface. 16. A specimen of the Spanish Moss, Tillandsia Usneoides, from Natchez, Mississippi.

The Committee, consisting of Dr. Horner and Dr. Hays, appointed on the 3d of January last, to report to the Society a description of a donation of Mastodon Bones, made to the Society by a subscription of members, gave in their report, which was directed to be printed in the Transactions of the Society.

The Committee, consisting of Dr. Hays, Mr. Peale, and Dr. Dunglison, to whom was referred a paper entitled "Note of the Remains of the Mastodon, and some other extinct animals, collected together in St. Louis, Missouri; by W. E. Horner, M.D., Professor of Anatomy University of Pennsylvania," recommended that an abstract of the same should be inserted in the Bulletin of the Society's Proceedings; and on motion, the report was accepted, and the committee discharged.

The collection referred to, was made by Mr. Albert Koch—a German resident in St. Louis, for the last five years—and has been obtained principally from two localities, Rock Creek, twenty miles south of St. Louis, and Gasconade County, two hundred miles above the mouth of the Missouri river. It consists of two hundred or more Teeth of the Mastodon and of the American Elephant. A dozen or more Lower Jaws of the Mastodon, with very numerous specimens of other parts of the head and skeleton generally, though there is no perfect head.

The most remarkable specimen is a head of an animal, which Mr. Koch calls nondescript, and considers to have been from four to six times the size of an elephant, though Dr. Horner esteems it extremely difficult to establish this. In the present mode of exhibition, the head shows a central oblong amorphous part, which measures six feet in length by two or three in width. It is furnished with enormous

tusks, eleven and three-twelfths feet long from their roots, and nine or ten inches in diameter—one foot and three inches of their length being inserted into the sockets. These tusks are semicircular, and stand out horizontally, with the concavity backwards. Thus placed, they are fifteen feet in a straight line, from the tip of the one to the tip of the other. Notwithstanding they were found in this position, very just doubts, Dr. Horner thinks, may be entertained of its being the natural one, as, in a state of decay of the alveolus, they might readily gravitate outwards, so as to assume that direction subsequent to the death of the animal. This specimen was in fact very much decayed, when Mr. Koch found it, and appears to have been fractured by rocks falling on it from the bluff above. The means taken to preserve it obscure the surface of the bones, as well as their configuration, and in attaching the fragments together, some have been put very much out of their position. For example, the glenoid cavity of the right side is monstrously far from the hind tooth, and is laterally much beyond its line: the intermaxillary bones are too long, and on comparing the position of the posterior molar teeth of the upper jaw with that of the lower, the upper molar teeth are found to be ten inches or more in advance of the lower, a relation so false and so unsuited to mastication, that it is not at all probable nature formed them thus. The molar teeth are four in number in each jaw, two on a side; the posterior one is seven inches long by four wide; the anterior, four and a half inches long by four wide. The conformation of the teeth is exactly that of the Mastodon, and the ridges and denticules are scarcely worn at all, a proof that the animal was not old. The upper part of the cranium of this animal is defective. The general configuration of the head is so amorphous, the fragments of which it is composed have their position so imperfectly regulated, and the whole surface is so coated with glue and paint, to preserve it, that an exact examination was impracticable. Its length is so extraordinary, that Dr. Horner considers it can scarcely be received as natural, and he is inclined to the opinion, from its dental system, that it belongs to the Mastodon; that by some accident the remains of two heads were found in the same line; that if there be but one, it has been much fractured, and a large quantity of extraneous matter blended with it, which it is difficult to distinguish. The latter conjecture, Dr. Horner thinks, is rendered more probable by the admission of Mr. Koch, that these bones were cemented to a layer of gravel a foot and a half in thickness, with

such tenacity, that the separation was accomplished with the greatest difficulty.

In the same collection of fossil bones is to be found the skeleton, nearly complete, of a Mastodon of very large size: the ribs are wanting, and the upper part of the cranium. The transverse diameter of the head, on a line with the foramen magnum, is three feet. The os femoris, in a perpendicular line, stands three feet nine inches high, and all the other bones are in this proportion. An estimate of the altitude of the animal when living, founded upon careful observations, instituted with the same view on the skeleton from Bucyrus, Ohio, recently obtained by the Society, would leave the inference, that the former animal has reached a height of from twelve to thirteen feet at the shoulders. This animal, in a popular advertisement on the subject of the Museum by Mr. Koch, is rated at eighteen feet in height, an altitude so great as to exceed much the evidence derivable from a measurement of the longest bones of the extremities, and the inductive and comparative estimate thence obtained.

The internal table of the cranium, the brain case, is entire, with a small surface of the contiguous cellular structure of bone in another fragment of the Mastodon. This forms so complete an oval body, that, in Dr. Horner's opinion, it is somewhat difficult to conceive that its shape was the result of merely accidental causes; Dr. Horner indeed thinks it rather authorizes the inference, that it had been chiselled or hammered designedly into that shape by the human cotemporaries of the animal.

There is also a small head, eighteen or twenty inches long, with tusks ten or eleven inches long in the upper jaw, and four mastodon teeth on each side of each jaw. This head is somewhat broken. The os frontis and the face, so far as Dr. Horner could judge, are so placed in regard to their front surface as to form a deep circular concavity, approximating, in shape, a fragment in the cabinet of the Society. Whether it ought to be viewed merely as a young Mastodon Giganteum, or another species of the Mastodon, Dr. Horner considers to be at present doubtful.

There are two radii of the Mastodon with the epiphyses or articular ends detached, owing to the youth of the animal: these pass for the arm bones of a giant fourteen or fifteen feet high, when his skeleton was complete. A similar misapprehension exists in regard to the vertebræ of a quadruped, probably a buffalo or young mammoth,

which are strung together in a vertical position, and pass for the back bone of a giant of similar height.

Another interesting relic has been denominated by the proprietor, Missourium Kochii, the first name in commemoration of its locality, the second of himself, its discoverer. It belongs undoubtedly, Dr. Horner states, to the Mastodon race; was not much inferior in size to the Elephant, and was furnished with tusks and indications of a proboscis having been attached to it. The tusks are four and a half feet in length, and at the roots have a circumference of eighteen inches; they are only half an inch apart at the socket, and project right and left, with the concavity forward. The teeth have the mammillose or Mastodon shape and conformation, and are three and a half inches in length by two and a half in breadth. The lower jaw is wanting.

There is an os humeri, probably of a megalonyx, which measures in length one foot eight inches, the ulna of the same animal, and also other bones, probably the radii, with some of the last phalanges.

Dr. Horner stated, that his sketch of this rich accumulation of fossil remains, and their examination were very imperfect, and the less instructive to him, for the want of standards of comparison in perfect skeletons, and in plates, neither of which means of elucidation exist in St. Louis, and he expressed a hope, that "their diligent and deserving collector, would furnish the scientific world with exact plates of such as are rare or unknown."

A communication was read from Miss Margaretta H. Morris, on the subject of the Hessian Fly, and of the Seraphion Destructor,—a parasite of the same. The communication was referred to a committee.

Mr. Lea read a paper, entitled "Descriptions of New Fresh Water and Land Shells, by Isaac Lea," which was referred to a committee.

Mr. Nuttall read a communication, entitled "Descriptions of New Species and Genera of Plants in the Natural Order Compositæ, collected on a Tour across the Continent to the Pacific, a Residence in Oregon, and a Visit to the Sandwich Islands and Upper California, during the Years 1834 and 1835, by Thos. Nuttall," which was referred to a committee.

Dr. Hays made some remarks on a printed description of two fossil animals, by Mr. Koch, of Missouri; the one a Mas-

todon, and the other probably, Dr. Hays thought, a Tetracauledon; the latter denominated, by Mr. Koch, Missourium Kochii.

Stated Meeting, October 16.

Present, thirty-one members.

Mr. Du Ponceau, President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Journal Asiatique, 3e Serie. No. 50 (February), 51 (March), 53 (April, May, and June), 1840; making the 9th Volume of the Series, except No. 49 (January), which is wanting.—*From the Asiatic Society of Paris.*

Commentationes Societatis Regiæ Scientiarum Gottingensis recensiores. Vol. VII. ad A. 1828—31. 4to. Gottingæ, 1832.—*From the Society.*

Transactions of the Linnean Society of London. Vol. XVIII. Part Third. 4to. London, 1840.—*From the Society.*

List of the Linnean Society of London. 4to. 1840.—*From the same.*

Proceedings of the Linnean Society of London to March 17, 1840, inclusive.—*From the same.*

Memorie della Reale Accademia delle Scienze di Torino. Serie Seconda. Tomo 1. 4to. Torino, 1839.—*From the Society.*

Fisica de' Corpi Ponderabili ossià Trattato della Costituzione generale de' Corpi, del Cavaliere Amedeo Avogadro, dell' Ordine civile di Savoia, &c. &c. Tomo 2. 8vo. Torino, 1838.—*From the Author.*

Public Documents of the 1st Session of the Twenty-sixth Congress. 1. On the Tobacco Trade. 2. On the National Defence and National Foundries. 3. On the Manufacture, &c. of Salt. 4. On the Receipts and Expenditures of the United States for the Year 1838.—*From Mr. James H. Caustin, of Washington.*

A Complete Treatise on Electricity, in Theory and Practice, with